FUJIFILM

DICOM Conformance Statement
Print Management Service Class
FUJI NETWORK PRINT SERVER
FN-PS551

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Revision History

Revision	Date	Author	Reason for Change

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1 Introduction

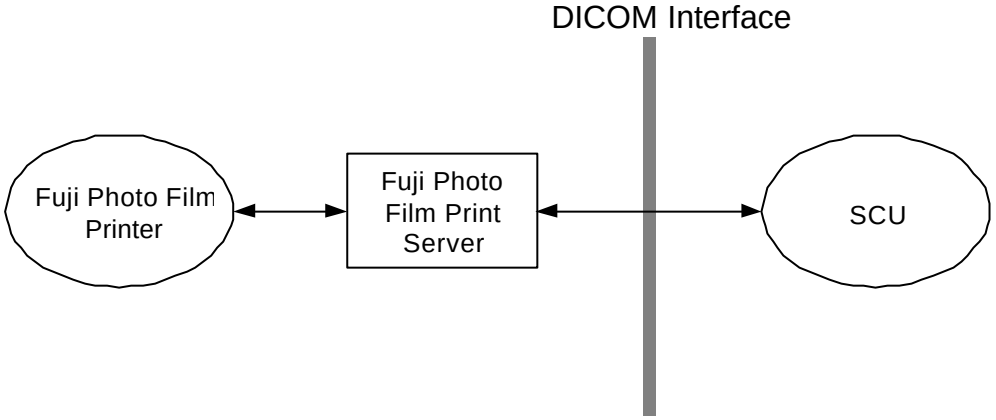
This document provides the DICOM conformance statement for the FUJI Photo Film FN-PS551 Print Server product..

2 Implementation Model

The FUJI Photo Film FN-PS551 Print Server is a single or dual (depending on configuration) Application Entities which provide the services of a DICOM Print Management Service Class.

2.1 Data Flow Diagram

The FUJI Photo Film FN-PS551 Print Server receives images from a DICOM Print Management Service Class User, and prints them on Fuji Photo Film Printer



2.2 Functional Definitions of Application Entities

The FUJI Photo Film FN-PS551 Print Server provides the DICOM Print Management Service Class support required to print images from one or more SCUs to attached FUJI Photo Film Laser imagers. The following functionality is supported:

- DICOM Association Management
- Management of DICOM Film Sessions, Film Boxes and Image
- Boxes
- Print Job Status Tracking
- Image Buffering
- Printing
- Printer Status Tracking

2.3 Sequencing of Real World Activities

Not applicable for Real World Activities.

3 Application Entity Specification

As the SCP, the FN-PS551 conforms to the following DICOM SOP Classes[1].

SOP Class Name	SOP Class UID
Verification SOP Class	1.2.840.10008.1.1
Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9
Print Job SOP Class	1.2.840.10008.5.1.1.14
Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15
Presentation LUT SOP Class (Supplement 22)	1.2.840.10008.5.1.1.23
Print Queue Management SOP Class (Supplement 13)	1.2.840.10008.5.1.1.26

[1] The following Correction Proposals are applied: CP16, 19, 20, 35, 49, 55, 56, 80, 81, 85, 94, 108

4 Association

4.1 Association Establishment Policies

- General
  - The SCU AE attempts to initiate a new Association for each print session.
  - Only the SCU AE shall release an Association.
  - The Association may be aborted by the SCU or the SCP.
  - The Maximum PDU Size for the PDUs offered by the SCP equals 32Kbytes.
- Number of Associations
  - Maximum 6 associations at a time. Further associations will be rejected with the reason 'busy'.
- Asynchronous Nature
  - Not support negotiation of multiple outstanding transactions.
- Implementation ID information
  - Implementation Class UID is 1.2.392.200036.9125.5422.1

4.2 Association Initiation

This application does not initiate any DICOM associations.

4.3 Association Acceptance Policy

This application accepts an association.

- Associated Real-World Activity

  When an association is established, one of the following activities may occur.

  1) The SCU instructs the printing of a set of images. The SCP prints the set of images.

  2) The SCU requires the status of print job or the printer. The SCP will respond it.

  3) The SCU sends a verification request. The SCP will respond it.
- Proposed Presentation Contexts

  The following transfer syntax is acceptable. Table-1

Name	UID
DICOM Implicit VR Little Endian	1.2.840.10008.1.2

The following presentation contexts are acceptable.

No.	Abstract Syntax		Transfer syntax	Role	Extended Negotiation
	Name	UID			
1	Verification SOP Class	1.2.840.10008.1.1	Table-1	SCP	None
2	Basic Grayscale Print Management Meta SOP Class	1.2.840.10008.5.1.1.9	Table-1	SCP	None
3	Print Job SOP Class	1.2.840.10008.5.1.1.14	Table-1	SCP	None
4	Printer SOP Class	1.2.840.10008.5.1.1.16	Table-1	SCP	None
5	Presentation LUT SOP Class	1.2.840.10008.5.1.1.23	Table-1	SCP	None

6	Print Queue Management SOP Class	1.2.840.10008.5.1.1.26	Table-1	SCP	None
7	Basic Annotation Box SOP Class	1.2.840.10008.5.1.1.15	Table-1	SCP	None

The 3rd and 4th SOP Classes that have been negotiated so far only by combined with the 2nd SOP Class are now permitted to be negotiated with no combination. The 3rd and 4th SOP Classes may inhibit SCP's resource consumption rather than when negotiated being combined with the 2nd SOP Class, resulting in improving SCP's processing speed (CP-81). The 6th SOP Class can be negotiated solely with no combination or being combined with any other.

♦ SOP Specific Conformance

- The FN-PS551 may return the following error codes in response to any message received.

Code	Status	Meaning
0122H	Failure	SOP class not supported
0211H	Failure	Unrecognized operation : the command is not supported for the SOP class (e.g. N_CREATE for Image Box SOP class)

- For 0107H, 0116H and B604H Warning Status, it is possible to disregard them and individually specify so that they are processed same as the “Success: (0000H).”
- It is possible to specify so that the N-EVENT-REPORT message is not issued.
- The maximum number of Print Job is 64.
- When the same Image Position (2020,0010) has been specified one or more times by N-SET in Basic Grayscale Image BOX, the Image Position specified the last will be effective. N-ACTION for Basic Film Session or Basic Film Box will quit normally, not resulting in C604H error (CP-80).
- In Failure status, no message will be returned by "Attribute List."
- In Success/Warning status when in N-CREATE, all supported attributes included in the instance that has been created as the "Attribute List" will be returned.
- In Success/Warning when in N-SET, items that have been properly updated in the items specified by the SCU will be returned as the "Attribute List." However, Preformatted grayscale image sequence in the Basic Grayscale Image Box will not be returned.
- When Status (0000,0900) = 0107H (Attribute list error), the Attribute Identifier List (0000,1005) will not be returned.
- In certain Failure/Warning status, the Error Comment (0000,0902) will be returned.
  See Appendix D.

5 Verification SOP Class (1.2.840.10008.1.1)

The FN-PS551 provides standard conformance to the DICOM Verification Service Class as an SCP.

Upon receipt from an SCU of a verification of communication request, the FN-PS551 will issue a confirmation.

6 Basic Film Session SOP Class (1.2.840.10008.5.1.1.1)

The following DIMSE services are supported.

- N-CREATE
- N-SET
- N-DELETE
- N-ACTION

6.1 N-CREATE

♦ Description

- Creates a Basic Film Session SOP instance and initializes it using the value sent from the SCU (default if no value is sent from the SCU).
- Creating instance of this SOP is required before creating the Basic Film Box SOP instance.
- An Association may have only one Basic Film Session SOP instance at a time. To use several Basic Film Session SOP instances, delete older ones and create new ones.

♦ Attribute Information

Tag	Name	Usage	Supported	Default
(2000,0010)	Number of Copies	U/M	1-99	Config
(2000,0020)	Print Priority	U/M	HIGH, MED LOW	LOW
(2000,0030)	Medium Type	U/M	CLEAR FILM, BLUE FILM	Config
(2000,0040)	Film Destination	U/M	PROCESSOR BIN_i	PROCESSOR
(2000,0050)	Film Session Lable	U/U	Up to 64 characters	Null string
(2000,0060)	Memory Allocation	U/U	1-131072	None
(2050,0500)	Referenced Presentation LUT Sequence	U/MC		None
(0008,1150)	>SOP Class UID	U/MC		None
(0008,1155)	>SOP Instance UID	U/MC		None
(2100,0160)	Owner ID	U/U		None

* (2000,0040) "BIN_i" specifies sorter bins on the printer provided with sorter. "i" is the pin number, ranging from 1 to the number of bins (max.30). If the printer is not provided with sorter, "BIN_i" is not effective and is substituted by PROCESSOR.

* (2000,0060) is used for reserving Disk space in KByte.

♦ Status

- Use defaults and return "Success:0000H" if no element values have been specified.
- Create a UID using SCP and return "Success:0000H" if there is no Affected SOP Instance UID (0000,1000) or it has been sent in length 0.
- If element values exceed specified ranges, use defaults and return "Warning:0116H."

- Warning will not be returned if a film type that is not loaded in the Laser Imager for output has been specified using Medium Type (2000,0030) and film output will be rendered in the type loaded in the Laser Imager[2].
- Basic Film Session SOP instance is created even with Warning and processing is possible continuously.
- Basic Film Session SOP instance will not be created in Failure status.

Code	Status	Meaning
0000H	Success	Film session successfully created. The actual values assigned to attributes are returned.
0107H	Warning	Attribute list error. Attributes not applicable to the Basic Film Session SOP instance have been specified.
0110H	Failure	Processing failure. An attempt was made to create the 2nd Basic Film Session SOP instance.
0110H	Failure	Printer is off-line[3].
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0213H	Failure	Resource Limitation. The requested allocation can temporarily not be provided.

♦ Remarks

- The following attributes of Basic Film Session IOD are not open to an SCU. These attributes are set up within an SCP when a Basic Film Box SOP instance is created.

Tag	Name
(2000, 0500)	Referenced Film Box Sequence
(0008, 1150)	> Referenced SOP Class UID
(0008, 1155)	> Referenced SOP Instance UID

6.2 N-SET

♦ Description

- Update attributes of the Basic Film Session SOP instance. It is possible to change all attributes that can be specified using N-CREATE.

♦ Status

- For a Warning status, attributes will not be updated, remaining in previous values. Processing can be continued.
- For a Failure status, attributes will not be updated, remaining in previous values. Processing can be continued.

[2] More than one film is commonly loaded into the laser imager. Therefore, no judgments can be formulated unless the Film Size ID (2010, 0050) is specified by Basic Film Box. Consequently, everything is handled as "Success."

[3] When the Laser Imager connected to the print server is in offline status being disabled to receive image data, Failure will be returned.

Code	Status	Meaning
0000H	Success	Specified attributes of the SOP instance have been updated. The actual values assigned to attributes are returned.
0107H	Warning	Attribute list error. Attributes that cannot be applied to the Basic Film Session SOP Instance have been specified.
0116H	Warning	Attribute Value out of Range.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0213H	Failure	Resource Limitation. The requested allocation can temporarily not be provided.

6.3 N-DELETE

♦ Description

- Deletes all information hierarchies rooted in the Basic Film Session SOP Instance. Releases assigned resources.

♦ Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance hierarchy has been deleted.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

6.4 N-ACTION

♦ Description

- After copying all information hierarchies rooted in the Basic Film Session SOP Instance, prints all relevant films. If one or more Film Boxes are included, Printing order will, for example, be as follows.
  1-2-3, 1-2-3
- Film Size IDs (2010,0050) of all Basic Film Box SOP Instances related with the Basic Film Session SOP Instance should be the same. If different IDs are included, returns "Failure:0110H" and prints no films. In such a case, N-ACTION should be issued to each Basic Film Box SOP Instance.
- The SCU will continuously be able to update and/or operate all information hierarchies rooted in the Basic Film Session SOP Instance, which will not affect print operation as instructed by N-ACTION.
- Creates the Print Job SOP Instance and returns its UID, if agreed according to Association setup.

♦ Parameters

Action Type Name = PRINT, Action Type ID = 1

Tag	Attribute	Usage	Comment
(2100,0500)	Referenced Print Job Sequence	-/MC	If Print Job SOP Class or Print Queue Management SOP Class is negotiated.
(0008,1150)	>Referenced SOP Class UID	-/MC	If Print Job SOP Class is negotiated.
(0008,1155)	>Referenced SOP Instance UID	-/MC	If Print Job SOP Class is negotiated.
(2100,0010)	>Print Job ID	-/MC	If Print Queue Management SOP Class is negotiated.

♦ Status

Code	Status	Meaning
0000H	Success	Films in the film session have been queued for printing.
0110H	Failure	Processing failure. Basic Film Box SOP Instance of different film sizes are present.
0115H	Failure	Invalid Argument Value. Returned if the Action Type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
B602H	Warning	Film Session SOP instance hierachy does not contain Image Box SOP Instance. Empty page will not be printed.
C600H	Failure	Film Session SOP Instance hierachy does not contain Film Box SOP Instances.
C601H	Failure	Unable to create Print Job SOP Instance. Print queue if full.

7 Basic Film Box (1.2.840.10008.5.1.1.2)

The following DIMSE services are supported.

- N-CREATE
- N-SET
- N-DELETE
- N-ACTION

7.1 N-CREATE

♦ Description

- Creates a Basic Film Box SOP instance and initializes it using the value sent from the SCU (default if no value is sent from the SCU).
- Initialization is effected so as to link "2000, 0500" (Referenced Film Box Sequence) of Basic Film Session SOP instance to the created Basic Film Box SOP instance.
- Creates Basic Grayscale Image Box SOP Instances as many as necessary in accordance with (2010,0010) (Image Display Format), and specifies them to (2010, 0510) (Referenced Image Box Sequence) of the Basic Film Box SOP Instance. Returns these values to the SCU as a Response.
- Creates Basic Annotation Box SOP Instances as many as necessary in accordance with (2010,0030) (Annotation Display Format ID), and specifies (2010, 0520) (Referenced Basic Annotation Box Sequence). Returns these values to the SCU as a Response. If the use of a Basic Annotation Box SOP Class in not agreed upon, no Basic Annotation Box SOP instance is created.[4]

♦ Attribute Information

(Basic Film Box Presentation Module)

Tag	Name	Usage	Supported	Default
(2010,0010)	Image Display Format	M/M	See Appendix A.	
(2010,0030)	Annotation Display Format ID	U/U	FORMAT1	FORMAT1
(2010,0040)	Film Orientation	U/M	PORTRAIT LANDSCAPE	Config
(2010,0050)	Film Size ID	U/M	14INX17IN 14INX14IN 11INX14IN 8INX10IN	Config
(2010,0060)	Magnification Type	U/M	CUBIC NONE (No magnification/reduction)	CUBIC
(2010,0080)	Smoothing type	U/U	SHARP SMOOTH MEDIUM	Config

[4] No matter whether this situation arises, annotation Text for which Configuration setup is completed will be recorded onto film.

(2010,0100)	Border Density	U/U	BLACK	Config
(2010,0110)	Empty Image Density	U/U	(Not supported)	
(2010,0120)	Min Density	U/U	0-300	Config
(2010,0130)	Max Density	U/M	0-300	Config
(2010,0140)	Trim	U/U	YES NO	Config
(2010,0150)	Configuration Information	U/M	See Appendix B.	Config
(2010,015E)	Illumination	U/MC		2000 cd/m^2
(2010,0160)	Reflective Ambient Light	U/MC		10 cd/m^2

(Basic Film Box Relationship Module)

(2010,0500)	Referenced Film Session Sequence	M/M		
(0008,1150)	>Referenced SOP Class UID	M/M		
(0008,1155)	>Referenced SOP instance UID	M/M		
(2010,0510)	Referenced Image Box Sequence	-/M		
(0008,1150)	>Referenced SOP Class UID	-/M		
(0008,1155)	>Referenced SOP instance UID	-/M		
(2010,0520)	Referenced Basic Annotation Box Sequence	-/MC		
(0008,1150)	>Referenced SOP Class UID	-/MC		
(0008,1155)	>Referenced SOP instance UID	-/MC		
(2050,0500)	Referenced Presentation LUT Sequence	U/MC		Basic Film Session Value
(0008,1150)	>SOP Class UID	U/MC		Basic Film Session Value
(0008,1155)	>SOP Instance UID	U/MC		Basic Film Session Value

* Specifying low densities in (2010,0100), (2010,0120) or (2010,0130) will affect film base densities.

- Status
  - If an attribute specified for the Basic Film Box SOP, but not supported by the FN-PS551, returns "Warning:0107H."
  - Returns "Success:0000H" with the UID generated using the SCP, if no Affected SOP Instance UID (0000,1000) is available or it has been sent in length 0.
  - Returns "Success:0000H" using the defaults, if values of "Usage SCU=U" elements have not been specified.
  - Returns "Warning:0116H" using the defaults, if values of "Usage SCU=U" elements exceed the range.

- Warning or Failure will not be indicated even if a size that is not available on the Laser Imager has been specified for image output using the Film Size ID (2010, 0050). Perform necessary procedures up to image processing to spool onto the output queue. Image output will be enabled if, for example, the printer is reconnected.
- Returns "Failure:0102H" if values of "Usage SCU=M" elements have not been specified. This also applies for when no values have been sent as the DataSet.
- Returns "Failure:0106H" if values of "Usage SCU=M" elements exceed the range.
- Even for the Warning status, a Basic Film Box SOP instance will be created, enabling to continue with processing.
- For the Failure status, no Basic Film Box SOP instance will be created. At this time, the Affected SOP Instance UID (0000,1000) will not be returned.

Code	Status	Meaning
0000H	Success	Film Box is successfully created. The actual values assigned to attributes are returned.
0106H	Failure	Invalid Attribute Value. Mandatory attribute had illegal value.
0107H	Waring	Attribute list error. An attribute not supported by the FN-PS551 has been specified. An attribute not applicable to the Basic Film Box SOP instance has been specified.
0110H	Failure	Processing failure. Returned if the number of film boxes exceeds 32.
0111H	Failure	Duplicate SOP instance. Instance UID given is already in use.
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0120H	Failure	Missing attribute. Returned if a mandatory attribute is missing.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.

7.2 N-SET

♦ Description

- Updates Basic Film Box SOP Instance attributes created the last.

♦ Attributes that can be updated

Tag	Name	Usage	Supported
(2010,0060)	Magnification Type	U/M	CUBIC NONE (No magnification /reduction)
(2010,0080)	Smootihg type	U/U	SHARP SMOOTH MEDIUM

(2010,0100)	Border Density	U/U	BLACK
(2010,0110)	Empty Image Density	U/U	(Not supported)
(2010,0120)	Min Density	U/U	0-300
(2010,0130)	Max Density	U/M	0-300
(2010,0140)	Trim	U/U	YES NO
(2010,0150)	Configuration Information	U/M	See Appendix B.
(2010,015E)	Illumination	U/MC	
(2010,0160)	Reflective Ambient Light)	U/MC	
(2050,0500)	Referenced Presentation LUT Sequence	U/MC	
(0008,1150)	>SOP Class UID	U/MC	
(0008,1155)	>SOP Instance UID	U/MC	

- Status
  - Returns "Failure:0120H" if no values have been sent as a DataSet.
  - For the Warning status, attributes will not be updated, with values remaining unchanged. Processing can be continued.
  - For the Failure status, attributes will not be updated, with values remaining unchanged. Processing can be continued.

Code	Status	Meaning
0000H	Success	Specified attributes of the SOP instance have been updated. The actual values assigned to attributes are returned.
0107H	Waring	Attribute list error. An attribute not supported by the FN-PS551 has been specified. An attribute not applicable to the Basic Film Box SOP instance has been specified.
0110H	Failure	Processing failure. The instance created the last was not specified.
0116H	Warning	Attribute Value Out of Range.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute. Returend if no DataSet is provided by the SCU.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.

7.3 N-DELETE

- Description
  - Deletes the Basic Film Box SOP instance hierarchy created the last.
  - Deletes the relevant part of (2000,0500) (Referenced Film Box Sequence) of the Basic Film Session SOP Instance.

♦ Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance hierarchy has been deleted.
0110H	Failure	Processing failure. The instance created the last was not specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

7.4 N-ACTION

♦ Description

- After copying all information hierarchies rooted in the specified Basic Film Box SOP Instance, prints all relevant films.
- The SCU will continuously be able to update and/or operate all information hierarchies rooted in the Basic Film Box SOP Instance, which will not affect print operation as instructed by N-ACTION.
- Creates the Print Job SOP Instance and returns its UID, if agreed according to Association setup.

♦ Parameters

Action Type Name = PRINT, Action Type ID = 1

Tag	Attribute	Usage	Comment
(2100,0500)	Referenced Print Job Sequence	-/MC	If Print Job SOP Class or Print Queue Management SOP Class is negotiated.
(0008,1150)	>Referenced SOP Class UID	-/MC	If Print Job SOP Class is negotiated.
(0008,1155)	>Referenced SOP Instance UID	-/MC	If Print Job SOP Class is negotiated.
(2100,0010)	>Print Job ID	-/MC	If Print Queue Management SOP Class is negotiated.

♦ Status

Code	Status	Meaning
0000H	Success	Success is normally returned.
0115H	Failure	Invalid Argument Value. Returned if the Action Type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
B603H	Warning	Film Box SOP Instance hierarchy does not contain Image Box SOP Instances (empty page). Empty page will not be printed.
C602H	Failure	Unable to create Print Job SOP Instance. Print queue if full.

8 Basic Grayscale Image Box (1.2.840.10008.5.1.1.4)

The following DIMSE service is supported.

- N-SET

8.1 N-SET

♦ Description

- Updates attribute information of the Basic Grayscale Image Box SOP instance belonging to the Film Box SOP instance created the last.
- (2010,0060) (Magnification Type), (2010,0080) (Smoothing Type) and (2010,0150) (Configuration Information) will prevail over values specified for the Film Box SOP instance.
- It is possible to erase image by sending (2020,0110) (Preformatted Grayscale Sequence) in length 0.
- When "2020, 0030" (requested image size) is specified, "2010, 0060" (magnification type) is unconditionally processed as CUBIC.
- When two or more images are set in the same Image position (2020, 0010), the last one takes effect.

♦ Attributes that can be Specified

(Basic Image Box Presentation Module)

Tag	Name	Usage	Supported	Default
(2020,0010)	Image position	M/M	1-x (See Appendix A.)	Non
(2020,0020)	polarity	U/M	NORMAL REVERSE	Config
(2010,0060)	magnification type	U/U	CUBIC NONE (No magnification/reduction)	Basic Film box Value
(2010,0080)	smoothing type	U/U	SHARP SMOOTH MEDIUM	Basic Film box Value
(2010,0120)	Min Density	U/U	0-300	Basic Film box Value
(2010,0130)	Max Density	U/U	0-300	Basic Film box Value
(2010,0150)	Configuration Information	U/U	See Appendix B.	Basic Film box Value
(2020,0030)	requested image size	U/U	See Appendix A.	None
(2020,0110)	preformatted grayscale image sequence	M/M		
(0028,0002)	>samples per pixel	M/M	1	None
(0028,0004)	>photometric interpretation	M/M	MONOCHROME1 MONOCHROME2	None
(0028,0010)	>rows	M/M	1-5792	None
(0028,0011)	>columns	M/M	1-5792	None
(0028,0034)	>pixel aspect ratio	MC/M	R\C (Vertical\Horizontal) R,C=1-9999	1\1
(0028,0100)	>bits allocated	M/M	8, 16	None
(0028,0101)	>bits stored	M/M	8, 10, 12	None

(0028,0102)	>high bit	M/M	7, 9, 11	None
(0028,0103)	>pixel representation	M/M	0	None
(7fe0,0010)	>pixel data	M/M	(any)	None

(Basic Image Box Relationship Module)

(2020,0130)	referenced image overlay box sequence (note)	U/MC	(Not supported)	
(0008,1150)	>referenced sop class uid	MC/M	(Not supported)	
(0008,1155)	>referenced sop instance uid	MC/M	(Not supported)	
(2050,0500)	Referenced Presentation LUT Sequence	U/U		
(0008,1150)	>SOP Class UID	U/U		
(0008,1155)	>SOP Instance UID	U/U		

♦ Status

- Returns "Success:0000H" using the defaults, if values of "Usage SCU=U" elements have not been Specified.
- Returns "Warning:0116H" using the defaults, if values of "Usage SCU=U" elements exceed the range.
- Returns "Failure:0102H" if values of "Usage SCU=M" elements have not been specified. This also applies for when no values have been sent as the DataSet.
- Returns "Failure:0106H" if values of "Usage SCU=M" elements exceed the range.
- Returns "Failure:0106H" with regard to (7fe0,0010) (pixel data), if the data length calculated from (0028,0010) (rows), (0028,0011) (columns) and (0028,0100) (bits allocated) does not agree with that of (7fe0,0010) (pixel data).
- For the Warning status, updates attributes. Processing can be continued.
- For the Failure status, does not update attributes, remaining the same. Processing can be continued.
- Returns "Warning:0116H" using the maximum size, if (2020,0030) (Requested Image Size) exceeds the maximum size determined by (2010,0010) (Image Display Format), (2010,0050) (Film Size ID) and (2020,0010) (Image Position).
- When “NONE” has been specified for (2010, 0060) (Magnification Type), changes (2010, 0060) (Magnification Type) from “NONE” to “CUBIC” and returns “Warning:B604H” if (0028, 0010) (Rows) and (0028, 0011) (Columns) exceed the maximum size determined by (2010, 0010) (Image Display Format), (2010, 0050) (Film Size ID), (2020, 0010) (Image Position) and (2010, 0040) (Film Orientation).

Code	Status	Meaning
0000H	Success	Image instance has been updated successfully.
0106H	Failure	Invalid attribute value. Mandatory attribute has illegal value.
0107H	Waring	Attribute list error.
0110H	Failure	Processing failure. The Basic Grayscale Image Box SOP instance not belonging to the Film Box SOP instance created the last has been specified.
0116H	Warning	Attribute Value Out of Range.

0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.
B604H	Waring	Image size is larger than image box size, the image has been demagnified.
B605H	Warning	Requested Min Density or Max Density outside of printer's operating range. The printer will use its respective minimum or maximum density value instead.
C605H	Failure	Insufficient memory in printer to store images.

9 Print JOB SOP Class (1.2.840.10008.5.1.1.14)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET

9.1 Overview

- One Print Job SOP Class instance represents one or more film print jobs belonging to the same film session and is possible to monitor execution of the job.
- The Print Job SOP Class instance will be created as requested by N-ACTION for Film Session SOP Class or Film Box SOP Class.
- The Print Job SOP Class instance will be deleted at the completion of the printing job or when Failure status results.

9.2 N-EVENT-REPORT

♦ Description

- As the status changes, N-EVENT-REPORT will be issued to the SCU of the Association that created the relevant instance. (No notice will be issued if the Association has been released.)
- After FAILURE or DONE status results, deletes the instance if the relevant confirmation has been received from the SCU.

♦ Event Types and Attributes

Event type name	Event type ID	Attribute	Tag	Usage
PENDING	1	Print Job ID	(2100,0010)	U/MC
		Printer Name	(2110,0030)	U/U
		Film Session Label	(2000,0050)	U/U
		Excution Status Info	(2100,0030)	U/M
PRINTING	2	Print Job ID	(2100,0010)	U/MC
		Printer Name	(2110,0030)	U/U
		Film Session Label	(2000,0050)	U/U
		Excution Status Info	(2100,0030)	U/M
DONE	3	Print Job ID	(2100,0010)	U/MC
		Printer Name	(2110,0030)	U/U
		Film Session Label	(2000,0050)	U/U
		Excution Status Info	(2100,0030)	U/M
FAILURE	4	Print Job ID	(2100,0010)	U/MC
		Printer Name	(2110,0030)	U/U
		Film Session Label	(2000,0050)	U/U
		Excution Status Info	(2100,0030)	U/M

* The Print Job ID (2100,0010) will be returned only when the Print Queue Management SOP Class is negotiated.

9.3 N-GET

♦ Description

- Returns instance-specified attribute information, with the assigned UID. Returns all attribute information if the DataSet has not come.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
(2100,0020)	Execution Status	U/M	PENDING PRINTING DONE FAILURE
(2100,0030)	Execution Status Info	U/M	Execution Status is DONE NORMAL Execution Status is PRINTING NORMAL Execution Status is FAILURE UNKNOWN Execution Status is PENDING See Appendix C.
(2000,0020)	Print Priority	U/M	HIGH, MED, LOW
(2100,0040)	Creation Date	U/U	
(2100,0050)	Creation Time	U/U	
(2110,0030)	Printer Name	U/U	Up to 16 characters (set at installation)
(2100,0070)	Originator	U/U	

♦ Status

- Returns "Warning:0107H" if an attribute defined as an attribute of the Basic Film Box SOP instance, but not supported by the FN-PS551, has been specified.

Code	Status	Meaning
0000H	Success	Print Job information is returned.
0107H	Waring	Attribute list error. An attribute not applicable to the Print Job SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

10 Printer SOP Class (1.2.840.10008.5.1.1.16)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET

10.1 Overview

- Used to represent the printer and to obtain printer status.
- At time of printer startup, the SCP automatically creates instance and awaits the "well known SOP instance UID." The value will be "1.2.840.10008.5.1.1.17."

10.2 N-EVENT-REPORT

♦ Description

- As the printer status changes, N-EVENT-REPORT will be issued to all associated SCUs for using the relevant printer.

♦ Events Types and Attributes

Event type name	Event type ID	Attribute	Tag	Usage
Normal	1			
Warning	2	Printer Name	(2110,0030)	U/U
		Printer Status Info	(2110,0020)	U/M
Failure	3	Printer Name	(2110,0030)	U/U
		Printer Info	(2110,0020)	U/M

10.3 N-GET

♦ Description

- Returns printer-instance-specified attribute information. Returns all attribute information if the DataSet has not come.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
(2110,0010)	printer status	U/M	NORMAL WARNING FAILURE
(2110,0020)	printer status info	U/M	Printer Status is NORMAL NORMAL Printer Status is WARNING See Appendix C. Printer Status is FAILURE UNKNOWN
(2110,0030)	printer name	U/U	Up to 16 characters (set at installation)
(0008,0070)	manufacture	U/U	FUJI PHOTO FILM CO., LTD

(0008,1090)	manufacture model name	U/U	FN-PS551
(0018,1000)	device serial number	U/U	Not supported
(0018,1020)	software versions	U/U	
(0018,1200)	date of last calibration	U/U	Not supported
(0018,1201)	time of last calibration	U/U	Not supported

* (0018,1020) are represented by the "major.minor" format. The "major" represents an alphabet from A to Z and the "minor," a two-digit decimal number from 00 to 99.

◆ Status

- Returns "Warning:0107H" if an attribute defined as an attribute of the Basic Film Box SOP instance, but not supported by the FN-PS551, has been specified.

Code	Status	Meaning
0000H	Success	Printer information is returned.
0107H	Waring	Attribute list error. An attribute not supported by the FN-PS551 has been specified. An attribute not applicable to the Print Job SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

11 Presentation LUT (1.2.840.10008.5.1.1.23)

The following DIMSE services are supported.

- N-CREATE
- N-DELETE

11.1 N-CREATE

♦ Description

- Creates the Presentation LUT SOP instance and initializes it according to values sent by the SCU.
- To combine the instance thus created to the Basic Film Session SOP instance, Basic Film Box SOP instance or Basic Grayscale Image Box SOP instance, it is necessary to set the UID of this instance for each instance using the N-CREATE or N-SET function.
- Settings using the Presentation LUT prevail those using the Configuration Information (2010, 0150).

♦ Attribute Information

Tag	Name	Usage	Supported	Default
(2050, 0010)	Presentation LUT Sequence	MC/M		None
(0028, 3002)	>LUT Descriptor	MC/M	The first value represents the number of elements that (0028,3006) includes. The second value represents the value of pixels to be mapped to the first element of (0028,3006). The third value represents the valid bit numbers of the elements that (0028,3006) includes. Ignore this value.	None
(0028, 3003)	>LUT Explanation	U/U	Any value is OK. Ignore this value.	None
(0028, 3006)	>LUT Data	MC/M		None
(2050, 0020)	Presentation LUT Shape	MC/M	IDENTITY LIN OD	None

* (2050,0020) is valid only when (2050,0010) has not been specified. When both have been specified, make sure to use (2050,0010).

♦ Status

- If values of each element of "Usage SCU=U" have not been specified, uses the default values and returns "Success:0000H."
- If values of each element of "Usage SCU=MC" have not been specified although needed, returns "Failure:0120H." This applies also when no DataSet has come.
- If values of each element of "Usage SCU=M" exceed the range, returns "Failure:0106H."
- The LUT Data (0028,3003) length must be twice as large as the first value of the LUT Descriptor (0028,3002). For other than this, returns "Failure:0106H" to the LUT Descriptor (0028,3002).

- For a Failure case, the Presentation LUT SOP instance will not be created and the Affected SOP Instance UID (0000,1000) will not be returned.
- Returns "Warning:0116H" when an attempt was made to specify to the LUT Explanation (0028,3003) a character string that exceeds 64 characters.

Code	Status	Meaning
0000H	Success	Presentation LUT is successfully created.
0106H	Failure	Invalid attribute LUT value. Mandatory attribute has illegal value.
0107H	Warning	Attribute list error.
0111H	Failure	Duplicate SOP instance. Instance UID given is already in use.
0116H	Warning	Attribute Value Out of Range.
0117H	Failure	Invalid Object Instance. Returned if a given instance UID has violated the UID construction rules.
0120H	Failure	Missing attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.

11.2 N-DELETE

◆ Description

- Deletes the Presentation LUT SOP instance, which, however, cannot be deleted when it is referenced by the Basic Film Session SOP instance, Basic Film Box SOP instance or Basic Grayscale Image Box SOP instance.

◆ Status

Code	Status	Meaning
0000H	Success	The specified SOP Instance has been deleted.
0110H	Failure	Processing failure. An attempt was made to delete an instance that has been referenced to.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

12 Basic Annotation Box SOP Class (1.2.840.10008.5.1.1.15)

The following DIMSE service is supported.

- N-SET

12.1 N-NET

♦ Description

- Updates the Attribute Information of the Basic Annotation Box SOP instance belonging to the Film Box SOP instance that was created the last.
- The Annotation already specified can be deleted if (2030,0020)(Text String) is specified with the length set to 0.
- When a multiple number of settings have been made to the same (2030,0010)(Annotation position), those made the last will be taken valid.

♦ Attribute Information

(Basic Annotation Presentation Module)

Tag	Name	Usage	Supported	Default
(2030, 0010)	Annotation position	M/M	1-6[5]	None
(2030, 0020)	Text String	U/M		NULL

♦ Status

- When no values have been specified for each element of "Usage SCU=U," uses the defaults and returns "Success:0000H."
- When no values have been specified for each element of "Usage SCU=M," returns "Failure:0120H." This applies also when no DataSet has come.
- If values of each element of "Usage SCU=M" exceed the range, returns "Failure:0106H."
- For a Failure case, attributes will not be updated, with the values remaining the same as before. Processing can be continued.
- Returns "Warning:0116H" when an attempt was made to specify to the Text String (2030,0020) a character string that exceeds 64 characters.

Code	Status	Meaning
0000H	Success	Annotation Box instance has been updated successfully.
0106H	Failure	Invalid attribute value. Mandatory attribute has illegal value.
0107H	Warning	Attribute list error.
0111H	Failure	Processing failure. The Basic Annotation Box SOP instance not belonging to the Film Box SOP instance that was created the last has been specified.
0116H	Warning	Attribute Value Out of Range.

[5] There are six Annotation Boxes as follows. 1: Top left, 2: Top center, 3: Top right, 4: Bottom left, 5: Bottom center, 6: Bottom right. Character fonts will depend on the configuration settings. Cut the end of a line if it is too long for printing.

0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.

13 Print Queue Management SOP Class (1.2.840.10008.5.1.1.26)

The following DIMSE services are supported.

- N-EVENT-REPORT
- N-GET
- N-ACTION

13.1 Overview

- Used for monitoring the Print Queue and the print job. Also used for deleting the print job and changing the order of job priority.
- When the printer is started up, the SCP automatically creates the Print Queue. As the "well known SOP Instance UID," this queue will be provided with the value of "1.2.840.10008.5.1.1.25."
- Jobs remaining in the Print Queue when the printer was shut down the last time will be restored automatically.

13.2 N-EVENT-REPORT

♦ Description

- Notifies status changes in the print queue, issuing the N-EVENT-REPORT, when status actually changes, to all SCUs that have agreed on with regard to the Print Queue Management SOP Class.

♦ Event Type

Event type name	Event type ID	Description	Attribute	Tag	Usage
HALTED	1	Queue operation is halted.	—	—	U/M
FULL	2	Queue is full.	—	—	U/M
NORMAL	3	Queue is operational.	—	—	U/M

13.3 N-GET

♦ Description

- Acquires information on all print jobs included in the Print Queue. Information on a job that has been deleted from the Print Queue because the job processing was completed will not be returned.

♦ Attributes that can be Obtained

Tag	Name	Usage	Supported
(2120, 0010)	Queue Status	U/M	NORMAL FULL HALTED
(2120, 0050)	Print Job Description Sequence	U/MC	
(2100, 0010)	>Print Job ID	U/MC	

(2100, 0020)	>Execution Status	U/MC	PENDING
(2100, 0030)	>Execution Status Info	U/MC	Execution Status is DONE. NORMAL Execution Status is PRINTING. NORMAL Execution Status is PENDING. See Appendix C.
(2100, 0040)	>Creation Date	U/U	
(2100, 0050)	>Creation Time	U/U	
(2000, 0020)	>Print Priority	U/MC	HIGH MED LOW
(2100, 0070)	>Origin AE	U/U	
(2100, 0140)	>Destination AE	U/U	
(2110, 0030)	>Printer Name	U/MC	Up to 16 characters (set at installation).
(2000, 0040)	>Film Destination	U/U	Not supported.
(2000, 0050)	>Film Session Label	U/U	
(2000, 0030)	>Medium Type	U/U	CLEAR FILM BLUE FILM
(2100, 0170)	>Number Of Films	U/U	
(2120, 0070)	>Referenced Print Job Sequence	U/MC	
(0008, 1150)	>>Referenced SOP Class UID	U/MC	
(0008, 1155)	>>Referenced SOP Instance UID	U/MC	

- Status
  - Returns "Warning:0107H" if an attribute not supported by the FN-PS551 has been specified, even though it is specified as the attribute of the Print Queue Management SOP instance.

Code	Status	Meaning
0000H	Success	Print Queue information is returned.
0107H	Warning	Attribute list error. An attribute that is not applied to the Print Queue Management SOP instance has been specified.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.

13.4 N-ACTION

♦ Description

- Changes the order of priority for print jobs specified.
- Deletes print jobs specified.

♦ Parameters

Action type name	Action type ID	Description	Attribute	Tag	Usage
PRIORITIZE	1	Change priority of queue entry	Print Job ID	2100, 0010	M/M
			Print Priority	2000, 0020	M/M
			Owner ID	2100, 0160	M/M
DELETE	2	Delete queue entry	Print Job ID	2100, 0010	M/M
			Owner ID	2100, 0160	M/M

♦ Status

Code	Status	Meaning
0000H	Success	Operation successfully completed.
0106H	Failure	Invalid Attribute Value. Returned if illegal print job ID is set.
0107H	Warning	Attribute list error. An attribute not supported by the FN-PS551 has been specified.
0115H	Failure	Invalid argument value. Returned if the Action type provided by the SCU is not recognized.
0119H	Failure	Class-Instance Conflict. Returned if the SOP class Instance UID is not defined for the given SOP Class.
0120H	Failure	Missing Attribute. Returned if a mandatory attribute of the Data Set, provided by the SCU AE, is missing.
C651H	Failure	Print queue is halted.
C652H	Failure	Mismatch of owner ID.
C653H	Failure	Action failed because the job was in process.

14 Communication Profiles

14.1 Supported Communication Stacks

The FN-PS551 Print Server provides DICOM V3.0 TCP/IP Network Communication support as defined in Part 8 of the DICOM Standard.

15 Extensions / Specializations / Privatizations

SOP Class : Basic Grayscale Image Box

- Attribute : bits stored (0028,0101)
  10 bits stored is supported. DICOM only specifies 8, 10 and 12 for number of bits stored.
- Attribute : high bit (0028,0102)
  High bit position 9th is supported. DICOM specifies 7th or 11th bit.
- Attribute: magnification type (2010,0060)
  If Requested Image Size (2020,0030) is specified, this SOP Class will be processed unconditionally as a CUBIC.

General

After the session has been established, initiates monitoring "time for data transmission timeout" set in Configuration. The timeout monitoring will be reset every time a piece of data is received from the SCU.

The session closes when a data transfer timeout occurs.

16 Configuration

- Specifying the entire FN-PS551
  - Host Name
  - IP Address
  - Subnet Mask
  - TCP Port Number used y SCP
  - AE title (Both individually defining AE for the two printers and combining them into the one AE are possible, depending on whether one or two printers are connected to the FN-PS551[6].)
  - Data transmission timeout
  - Annotation Text & Font

- Specifying for each SCU AE title (defaults are used for unregistered AEs)
  - Whether 0107H status is effective or not

[6] If resolutions for the two printers are different with each other, specifying Requested Image Size (2020,0030) or Magnification Type (2010,0060)=NONE in the Basic Grayscale Image will use only the first printer.

- Whether 0116H status is effective or not
- Whether B604H status is effective or not
- Whether N-EVENT-REPORT is effective or not
- Number of Copies (2000, 0010)
- Medium Type (2000,0030)
- Film orientation (2010,0040)
- Film Size ID (2010,0050)
- Smoothing type (2010,0080)
- Border Density (2010,0100)
- Min Density (2010,0120)
- Max Density (2010,0130)
- Trim (2010,0140)
- Configuration Information (2010,0150)
- Polarity (2020,0020)

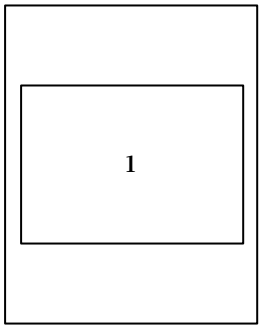
Appendix A

■ Image Display Format (2010,0010)

Image Position (2010,0010)

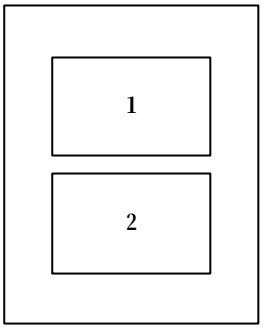
1. 14”× 17” (35cm × 43cm) PORTRAIT

STANDARD＼1.1



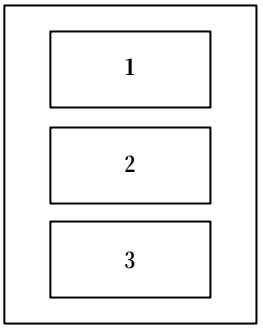
HP01

STANDARD＼1.2



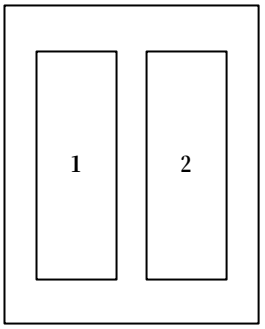
HP02

STANDARD＼1.3

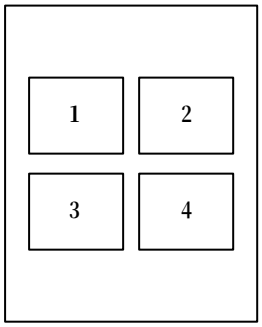


HP03

STANDARD＼2.1

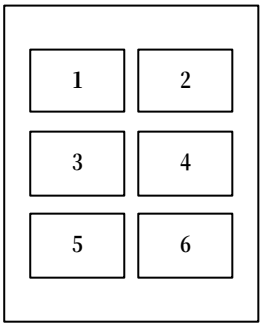


STANDARD＼2.2



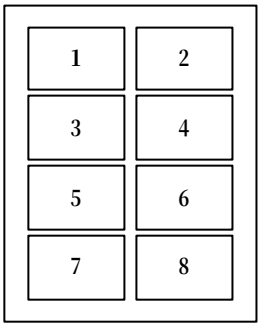
HP04

STANDARD＼2.3



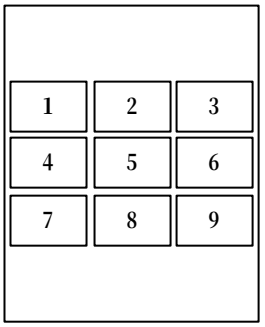
HP06

STANDARD＼2.4



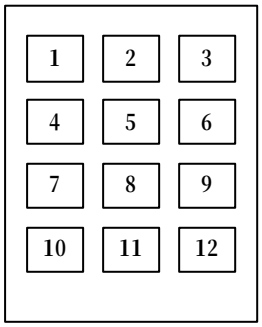
HP08

STANDARD＼3.3



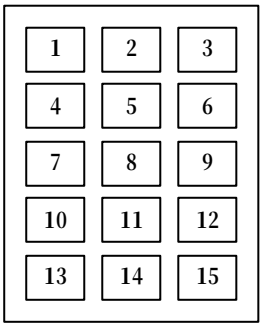
HP09

STANDARD＼3.4



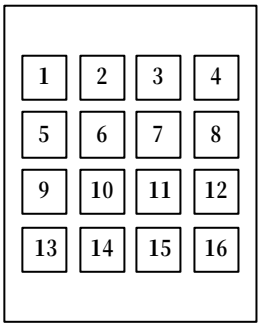
HP12

STANDARD＼3.5



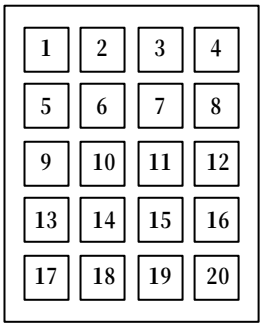
HP15

STANDARD＼4.4



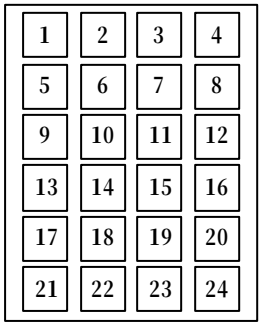
HP16

STANDARD＼4.5



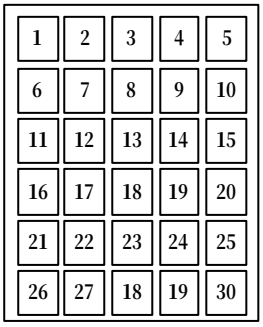
HP20

STANDARD＼4.6



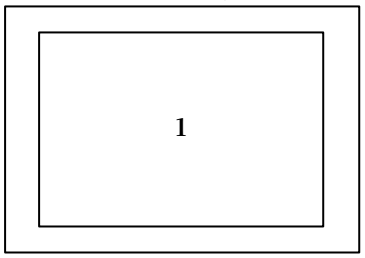
HP24

STANDARD＼5.6



2. 14” × 17” (35cm × 43cm) LANDSCAPE

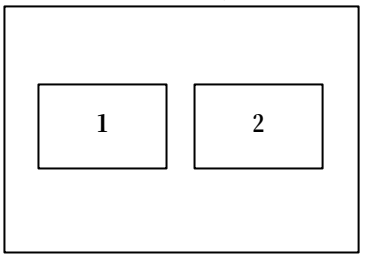
STANDARD＼1.1



HL01

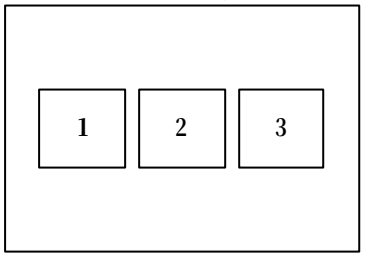
STANDARD＼1.2

STANDARD＼2.1



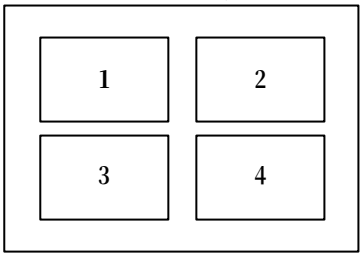
HL02

STANDARD＼3.1



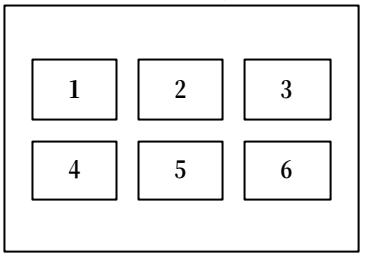
HL03

STANDARD＼2.2



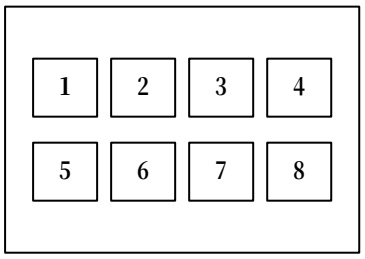
HL04

STANDARD＼3.2



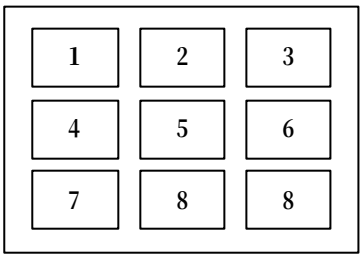
HL06

STANDARD＼4.2



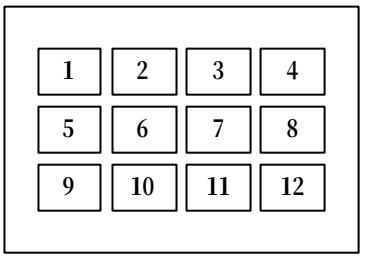
HL08

STANDARD＼3.3



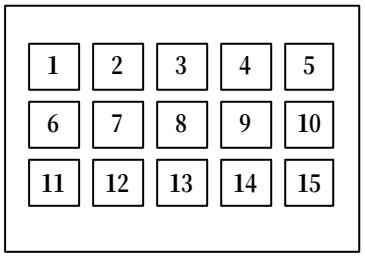
HL09

STANDARD＼4.3



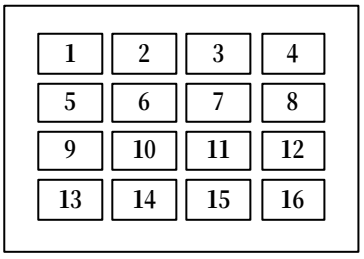
HL12

STANDARD＼5.3



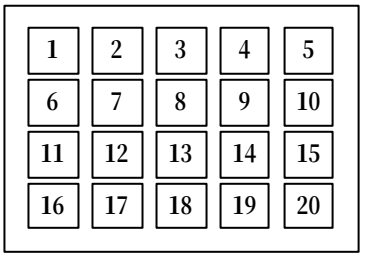
HL15

STANDARD＼4.4



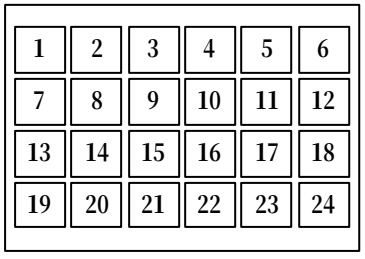
HL16

STANDARD＼5.4



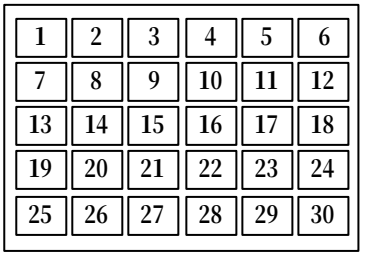
HL20

STANDARD＼6.4



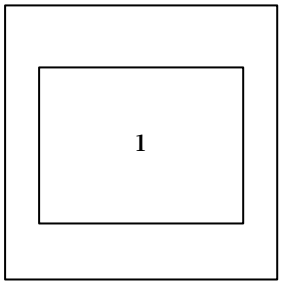
HL24

STANDARD＼6.5



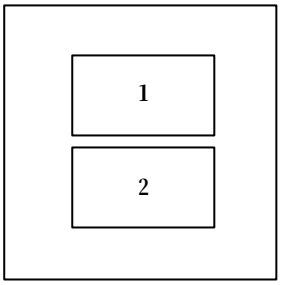
3. 14” × 14” (35cm × 35cm)

STANDARD＼1.1



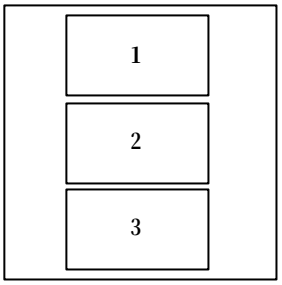
DP01

STANDARD＼1.2



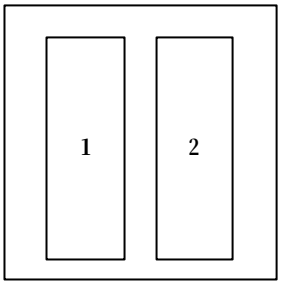
DP02

STANDARD＼1.3

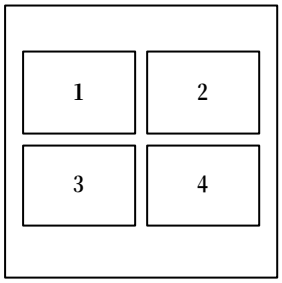


DP03

STANDARD＼2.1

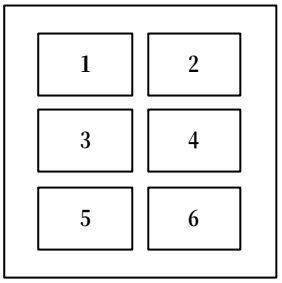


STANDARD＼2.2



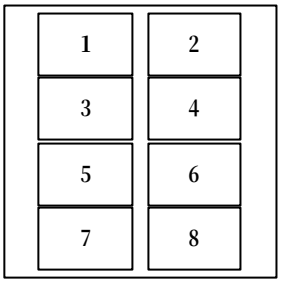
DP04

STANDARD＼2.3



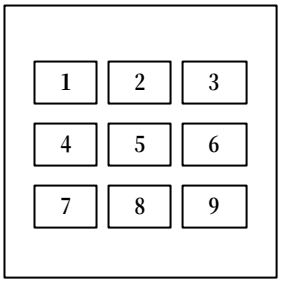
DP06

STANDARD＼2.4



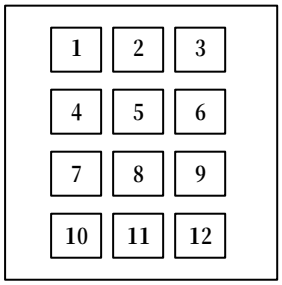
DP08

STANDARD＼3.3



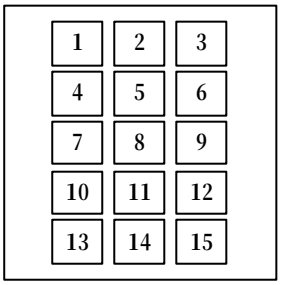
DP09

STANDARD＼3.4



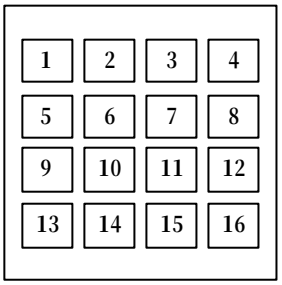
DP12

STANDARD＼3.5



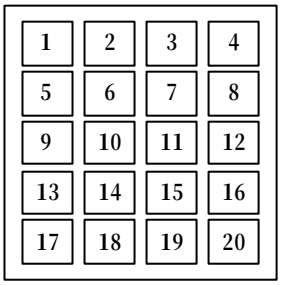
DP15

STANDARD＼4.4



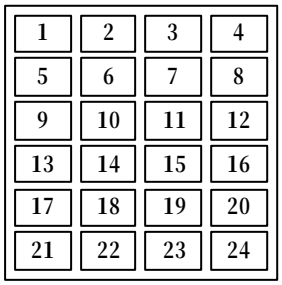
DP16

STANDARD＼4.5



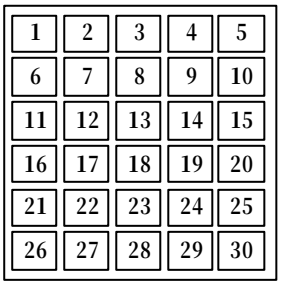
DP20

STANDARD＼4.6



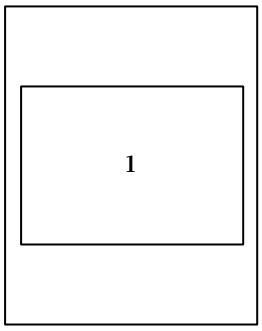
DP24

STANDARD＼5.6



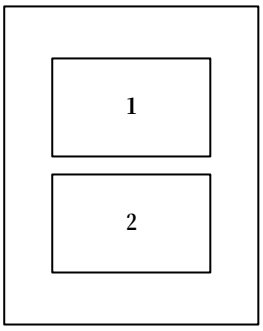
4. 11” × 14” (26cm× 36cm) PORTRAIT

STANDARD＼1.1



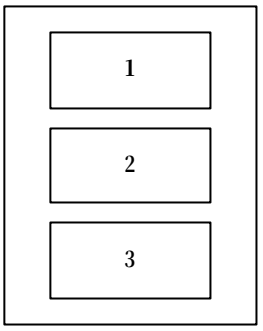
BP01

STANDARD＼1.2



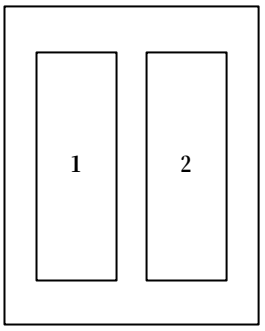
BP02

STANDARD＼1.3

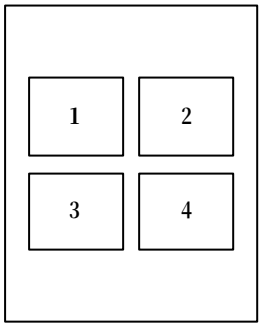


BP03

STANDARD＼2.1

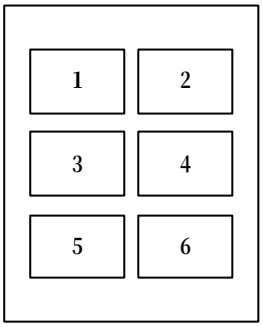


STANDARD＼2.2



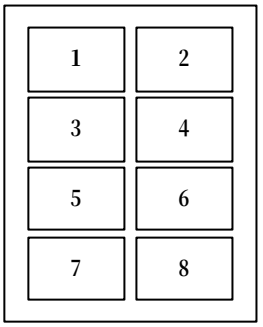
BP04

STANDARD＼2.3



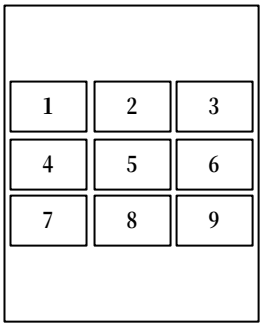
BP06

STANDARD＼2.4



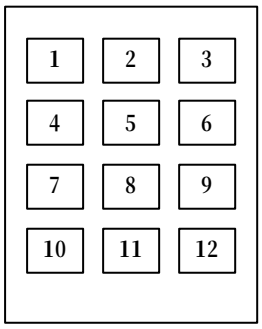
BP08

STANDARD＼3.3



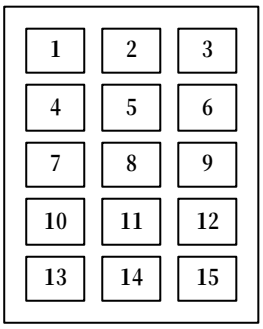
BP09

STANDARD＼3.4



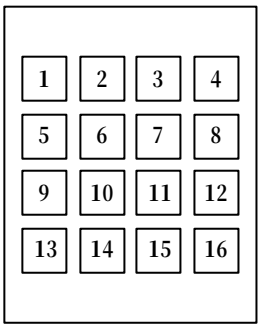
BP12

STANDARD＼3.5



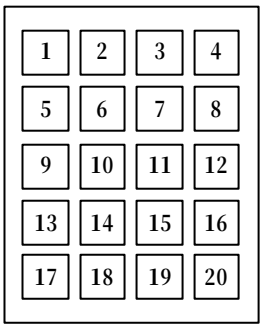
BP15

STANDARD＼4.4



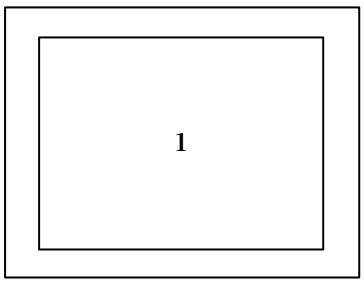
BP16

STANDARD＼4.5



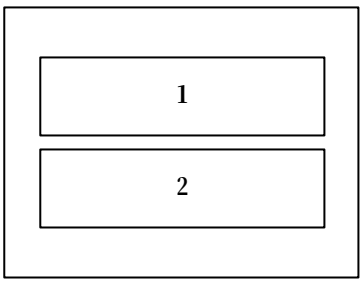
5. 11” × 14” (26cm × 36cm) LANDSCAPE

STANDARD＼1.1

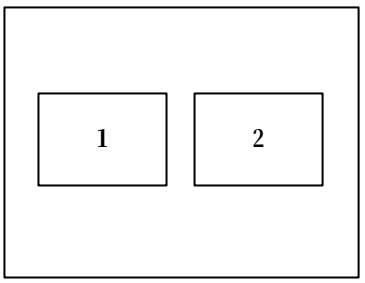


BL01

STANDARD＼1.2

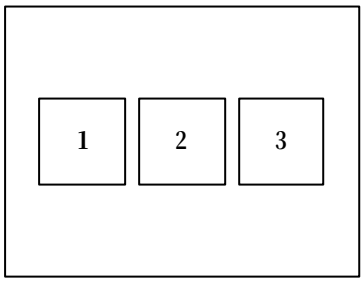


STANDARD＼2.1



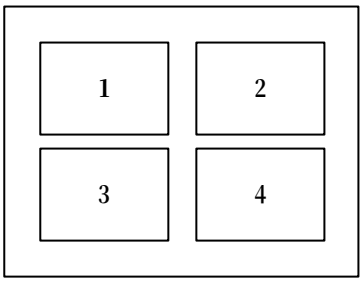
BL02

STANDARD＼3.1



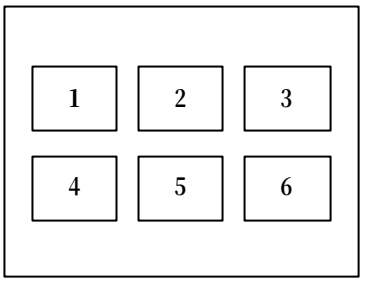
BL03

STANDARD＼2.2



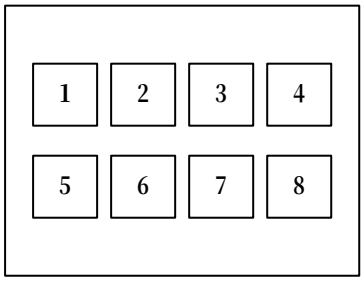
BL04

STANDARD＼3.2



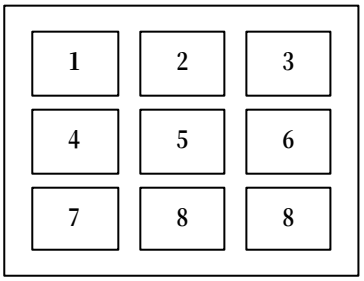
BL06

STANDARD＼4.2



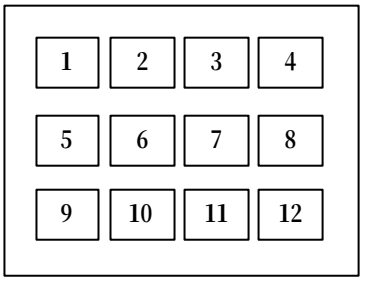
BL08

STANDARD＼3.3



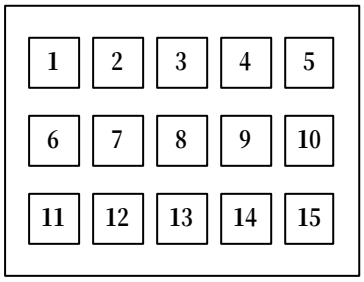
BL09

STANDARD＼4.3



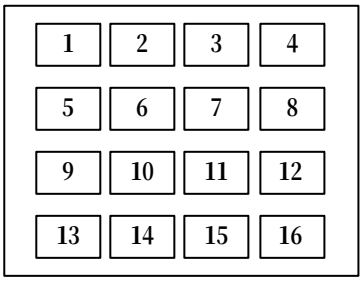
BL12

STANDARD＼5.3



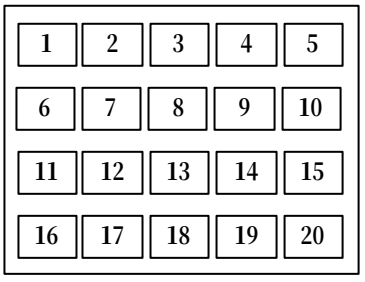
BL15

STANDARD＼4.4



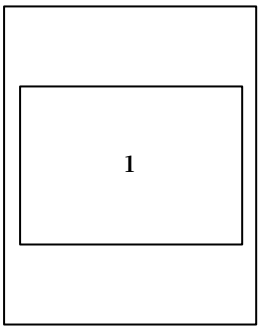
BL16

STANDARD＼5.4



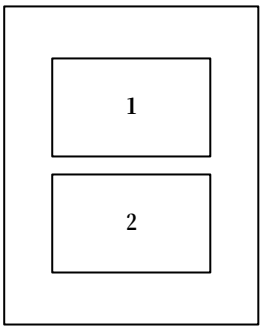
6. 8” × 10” (20cm× 25cm) PORTRAIT

STANDARD＼1.1



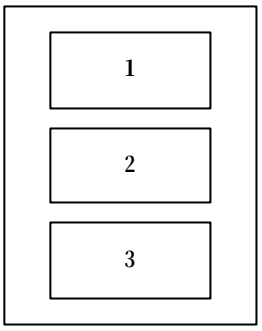
BP01

STANDARD＼1.2



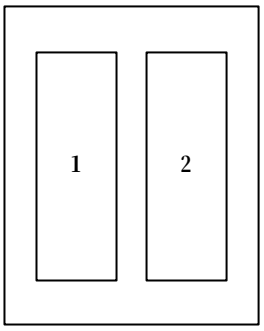
BP02

STANDARD＼1.3

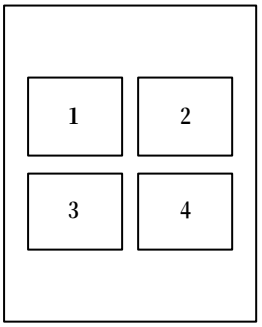


BP03

STANDARD＼2.1

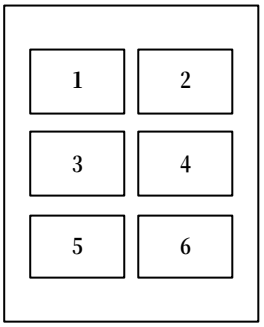


STANDARD＼2.2



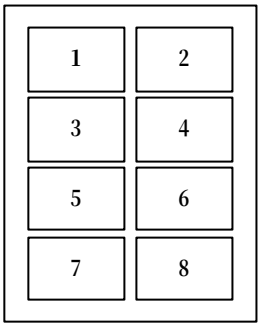
BP04

STANDARD＼2.3



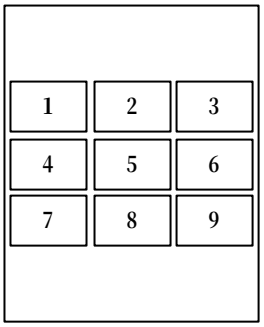
BP06

STANDARD＼2.4



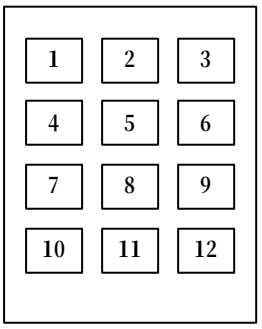
BP08

STANDARD＼3.3



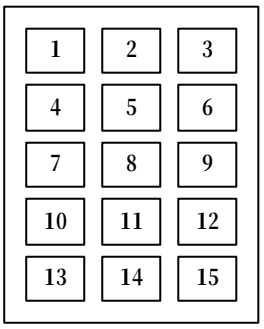
BP09

STANDARD＼3.4



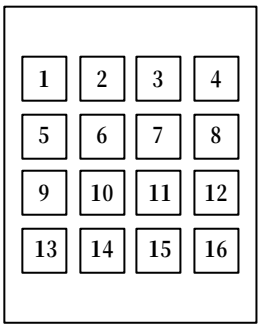
BP12

STANDARD＼3.5



BP15

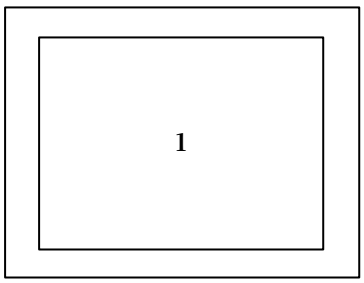
STANDARD＼4.4



BP16

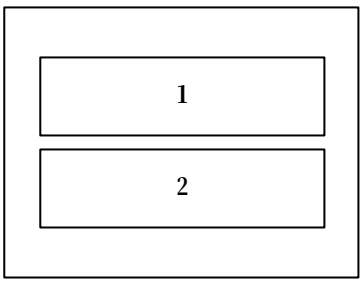
7. 8" × 10" (20cm × 25cm) LANDSCAPE

STANDARD＼1.1

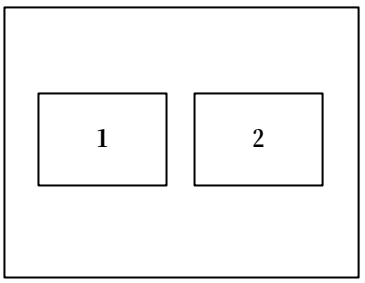


BL01

STANDARD＼1.2

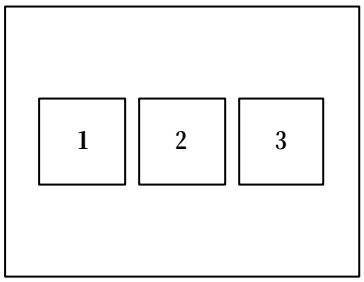


STANDARD＼2.1



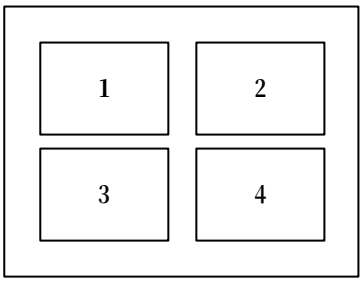
BL02

STANDARD＼3.1



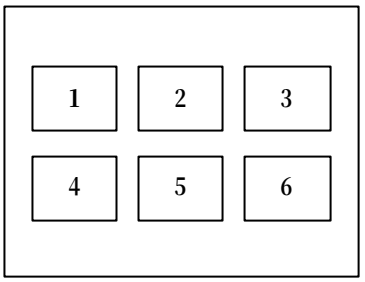
BL03

STANDARD＼2.2



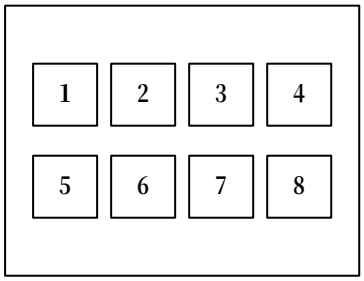
BL04

STANDARD＼3.2



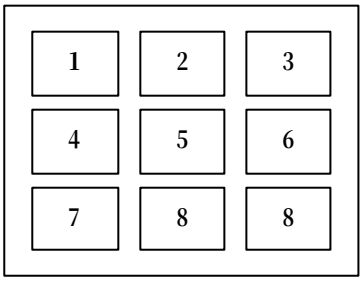
BL06

STANDARD＼4.2



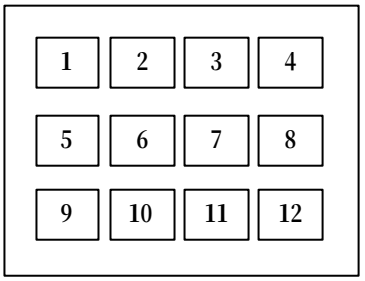
BL08

STANDARD＼3.3



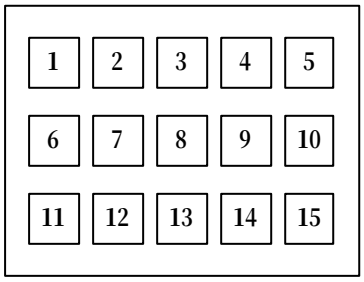
BL09

STANDARD＼4.3



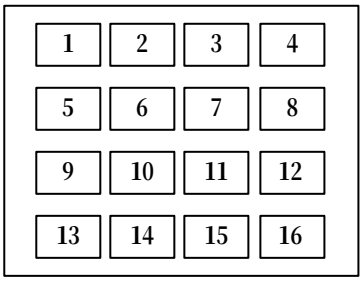
BL12

STANDARD＼5.3



BL15

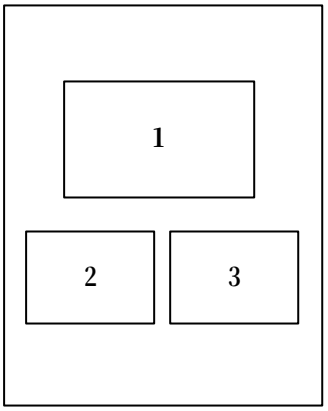
STANDARD＼4.4



BL16

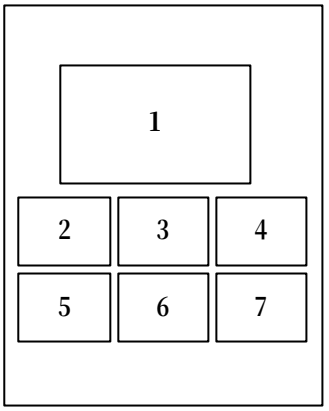
8. 14" × 17" (35cm× 43cm) PORTRAIT MIXED FORMAT

ROW＼1.2



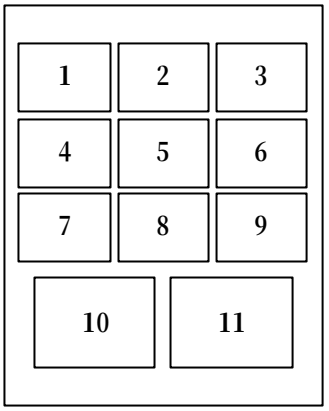
HPM1

ROW＼1.3.3



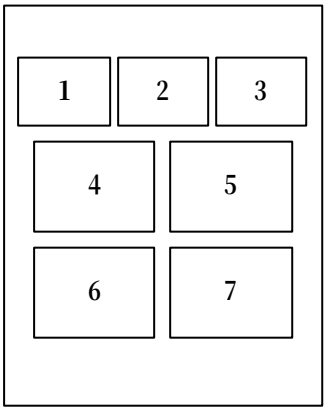
HPM2

ROW＼3.3.3.2



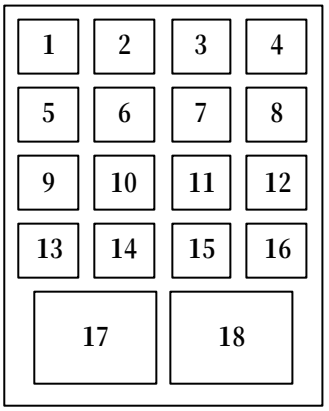
HPM4

ROW＼3.2.2



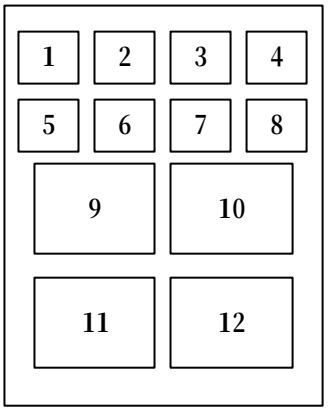
HPM5

ROW＼4.4.4.4.2



HPM6

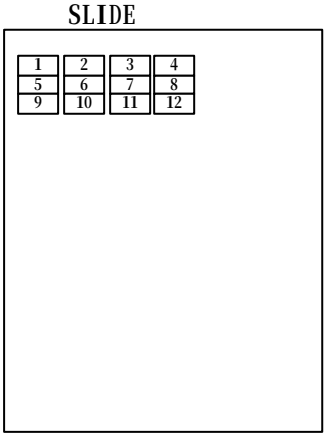
ROW＼4.4.2.2



HPM7

Portrait Slide Format

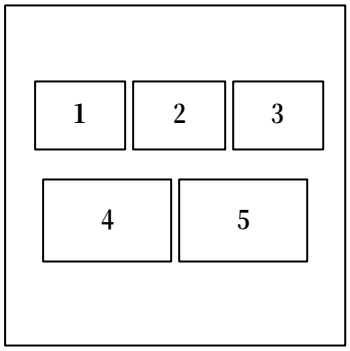
SLIDE



HPS1

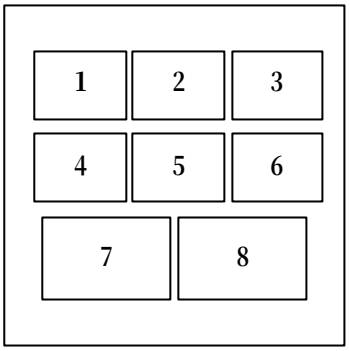
9. 14” × 14” (35cm× 35cm) MIXED FORMAT

ROW＼3.2



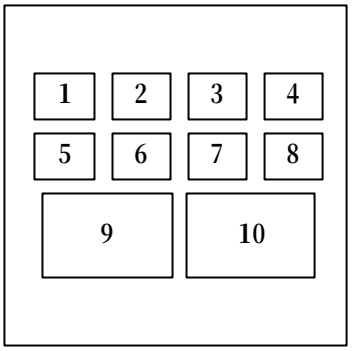
DPM1

ROW＼3.3.2



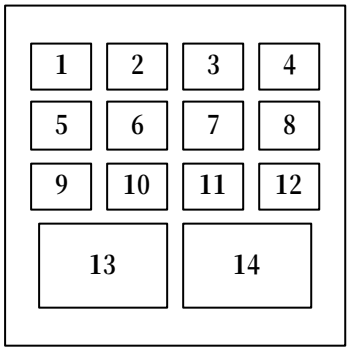
DPM2

ROW＼4.4.2



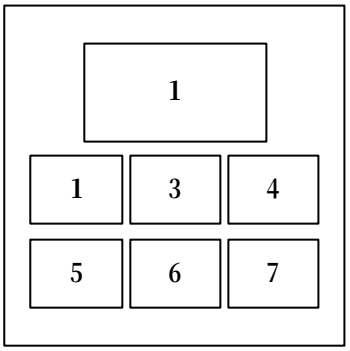
DPM3

ROW＼4.4.4.2



DPM4

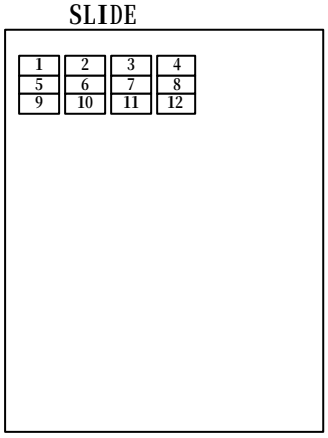
ROW＼1.3.3



DPM5

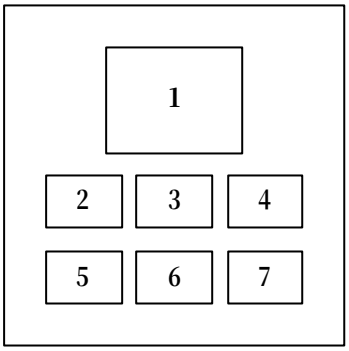
Portrait Slide Format

SLIDE



DPS1

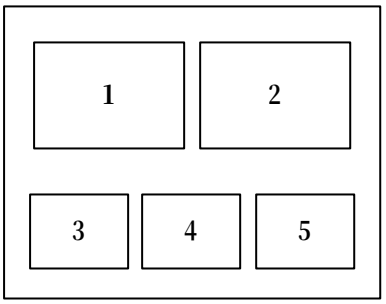
10. 11” × 14” (26cm × 36cm) PORTRAIT MIXED FORMAT



BPM1

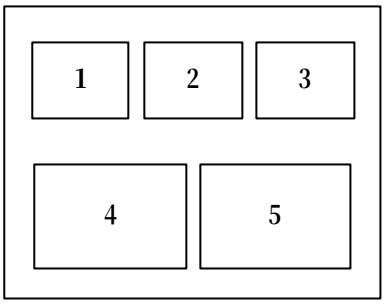
11. 11” × 14” (26cm × 36cm) PORTRAIT MIXED FORMAT

ROW＼2.3



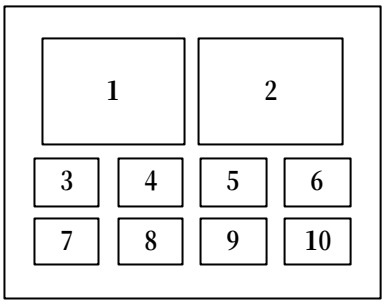
BLM1

ROW＼3.2



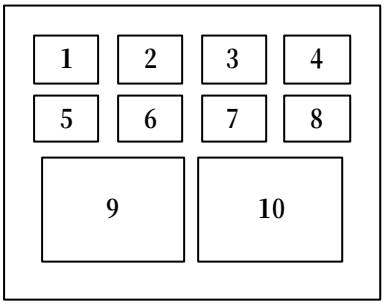
BLM2

ROW＼2.4.4



BLM3

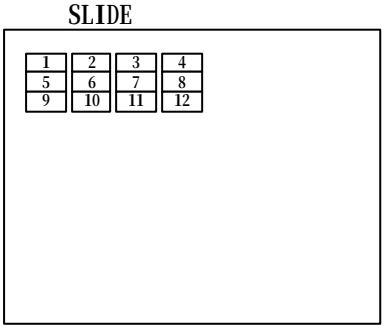
ROW＼4.4.2



BLM4

Portrait Slide Format

SLIDE



BLS1

■ Requested Image Size (2020,0030)

The tables below show the maximum number of pixels that can be recorded without reducing the image size. Calculate the maximum value of the requested image size[1] based on values shown in the Column of those tables.

FL-IM (1).....A value divided by 10 (the printer's image recording density is 10lines/mm)

*Printer series names: FM-DP L, CR-DP L, FL-IM D, FL-IM II, CR-LP414N, FL-IM2636N, FL-IM3543N, FL-IM3543MN or FL-IM3535M

FL-IM (2).....A value divided by 20 (the printer's image recording density is 20lines/mm)

*Printer series names: FM-DP L or CR-DP L

CR-DP.....A value divided by 12 (the printer's recording density is 300DPI)

*Printer series names: FM-DP3543, FM-DP2636, DRYPIX1000 or DRYPIX3000

The above values are given on the assumption that the frame width to be 0 and interval between each image data to be 20 for the configuration settings with the FN-PS551. Increasing the frame width by 1 will reduce the size by 2. If interval between each image data is changed, such a change will be reflected or assigned equally to each image data.

Allowable values differ depending on the image data recording pitch of the printer connected to the FN-PS551.

Note that values shown in "Column" are applicable to the X (horizontal) dimension and "Row," the Y (vertical) dimension.

[1] It used to be specified "Length in mm that Image rows of the Image are to be printed." But, it has been changed to "Width (X-dimension) in mm of the image to be printed" according to CP108. Thus, calculate it based on the values shown in Column.

♦ 14”×17” Portrait

		FL-IM		CR-DP	
Format		Column	Row	Column	Row
STANDARD\1,1		3500	4170	4072	4891
STANDARD\1,2		3500	2075	4072	2435
STANDARD\1,3		3500	1376	4072	1617
STANDARD\2,2		1740	2075	2026	2435
STANDARD\2,3		1740	1376	2026	1617
STANDARD\2,4		1740	1027	2026	1207
STANDARD\3,3		1153	1376	1344	1617
STANDARD\3,4		1153	1027	1344	1207
STANDARD\3,5		1153	818	1344	962
STANDARD\4,4		860	1027	1003	1207
STANDARD\4,5		860	818	1003	962
STANDARD\4,6		860	678	1003	798
STANDARD\5,6		684	678	798	798
ROW\1,2	1	3500	2076	4072	2435
	2-3	1740	2047	2026	2433
ROW\1,3,3	1	3500	2066	4072	2423
	2-7	1153	1032	1344	1212
ROW\1,3,3S	1	3500	2272	4072	2665
	2-7	1153	929	1344	1091
ROW\3,3,3,2	1-9	1153	948	1344	1114
	10-11	1740	1266	2026	1485
ROW\3,2,2	1-3	1153	1204	1344	1412
	4-7	1740	1463	2026	1717
ROW\4,4,4,4,2	1-16	860	682	1003	802
	17-18	1740	1362	2026	1598
ROW\4,4,2,2	1-8	860	685	1003	805
	9-12	1740	1370	2026	1608

♦ 14”×17” Landscape

	FL-IM		CR-DP	
Format	Column	Row	Column	Row
STANDARD\1,1	4240	3442	4972	3993
STANDARD\2,1	2110	3442	2476	3993
STANDARD\3,1	1400	3442	1644	3993
STANDARD\2,2	2110	1711	2476	1986
STANDARD\3,2	1400	1711	1644	1986
STANDARD\4,2	1045	1711	1228	1986
STANDARD\3,3	1400	1134	1644	1317
STANDARD\4,3	1045	1134	1228	1317
STANDARD\5,3	832	1134	978	1317
STANDARD\4,4	1045	845	1228	983
STANDARD\5,4	832	845	978	983
STANDARD\6,4	690	845	812	983
STANDARD\6,5	690	672	812	782

♦ 14”×14”

Format		Column	Row
STANDARD\1,1		3500	3410
STANDARD\1,2		3500	1695
STANDARD\1,3		3500	1123
STANDARD\2,2		1740	1695
STANDARD\2,3		1740	1123
STANDARD\2,4		1740	837
STANDARD\3,3		1153	1123
STANDARD\3,4		1153	837
STANDARD\3,5		1153	666
STANDARD\4,4		860	837
STANDARD\4,5		860	666
STANDARD\4,6		860	552
STANDARD\5,6		684	552
ROW\3,2	1-3	1153	1412
	4-5	1740	1978
ROW\3,3,2	1-6	1153	842
	7-8	1740	1686
ROW\4,4,2	1-8	860	842
	9-10	1740	1686
ROW\4,4,4,2	1-12	860	609
	13-14	1740	1523
ROW\1,3,3	1	3500	1392
	2-7	1153	989

♦ 26×36cm Portrait

		FL-IM (1)		FL-IM (2)		CR-DP	
Format		Column	Row	Column	Row	Column	Row
STANDARD\1,1		2538	3522	5075	7043	2962	4005
STANDARD\1,2		2538	1751	5075	3511	2962	1992
STANDARD\1,3		2538	1161	5075	2334	2962	1321
STANDARD\2,2		1259	1751	2527	3511	1471	1992
STANDARD\2,3		1259	1161	2527	2334	1471	1321
STANDARD\2,4		1259	865	2527	1746	1471	986
STANDARD\3,3		833	1161	1678	2334	974	1321
STANDARD\3,4		833	865	1678	1746	974	986
STANDARD\3,5		833	688	1678	1393	974	785
STANDARD\4,4		619	865	1254	1746	725	986
STANDARD\4,5		619	688	1254	1392	725	785
ROW\1,3,3	1	2538	1722	5075	3443	2962	1958
	2-7	1259	584	1678	1780	974	1008

♦ 26×36cm Landscape

		FL-IM (1)		FL-IM (2)		CR-DP	
Format		Column	Row	Column	Row	Column	Row
STANDARD\1,1		3600	2460	7199	4919	4096	2871
STANDARD\2,1		1790	2460	3589	4919	2038	2871
STANDARD\3,1		1187	2460	2386	4919	1352	2871
STANDARD\2,2		1790	1220	3589	2449	2038	1425
STANDARD\3,2		1187	1220	2386	2449	1352	1425
STANDARD\4,2		885	1220	1785	2449	1009	1425
STANDARD\3,3		1187	807	2386	1626	1352	943
STANDARD\4,3		885	807	1785	1626	1009	943
STANDARD\5,3		704	807	1424	1626	803	943
STANDARD\4,4		885	600	1785	1215	1009	702
STANDARD\5,4		704	600	1423	1215	803	702
ROW\2,3	1-2	1790	1424	3589	2847	2038	1662
	3-5	1187	1016	2386	2031	1352	1190
ROW\3,2	1-3	1187	1016	2386	2031	1352	1186
	4-5	1790	1424	3589	2847	2038	1666
ROW\2,4,4	1-2	1790	1210	3589	2419	2038	1412
	3-10	885	605	1785	1219	1009	710
ROW\4,4,2	1-8	885	605	1785	1219	1009	707
	9-10	1790	1210	3589	2419	2038	1417

♦ 8”×10” Portrait

		FL-IM (1)		FL-IM (2)		CR-DP	
Format		Column	Row	Column	Row	Row	Row
STANDARD\1,1		1945	2410	3907	4819	2280	2812
STANDARD\1,2		1945	1195	3907	2399	2280	1396
STANDARD\1,3		1945	790	3907	1593	2280	924
STANDARD\2,2		967	1195	1943	2399	1130	1396
STANDARD\2,3		967	790	1943	1593	1130	924
STANDARD\2,4		967	587	1943	1190	1130	688
STANDARD\3,3		638	790	1289	1593	746	924
STANDARD\3,4		638	587	1289	1190	746	688
STANDARD\3,5		638	466	1289	948	746	546
STANDARD\4,4		473	587	962	1190	555	688
ROW\1,3,3	1	1954	1155	3907	2309	2280	1347
	2-7	638	608	1289	1225	746	711

♦ 8”×10” Landscape

		FL-IM (1)		FL-IM (2)		CR-DP	
Format		Column	Row	Column	Row	Row	Row
STANDARD\1,1		2466	1898	4931	3795	2877	2215
STANDARD\2,1		1223	1898	2455	3795	1428	2215
STANDARD\3,1		808	1898	1630	3795	945	2215
STANDARD\2,2		1223	939	2455	1887	1428	1097
STANDARD\3,2		808	939	1630	1887	945	1097
STANDARD\4,2		601	939	1218	1887	704	1097
STANDARD\3,3		808	619	1630	1251	945	725
STANDARD\4,3		601	619	1218	1251	704	725
STANDARD\5,3		477	619	970	1251	559	725
STANDARD\4,4		601	459	1218	934	704	538
ROW\2,3	1-2	1223	1082	2455	2163	1428	1263
	3-5	808	797	1630	1593	945	930
ROW\3,2	1-3	808	761	1630	1521	945	889
	4-5	1223	1118	2455	2235	1428	1305
ROW\2,4,4	1-2	1223	914	2455	1827	1428	1067
	3-10	601	472	1218	954	704	553
ROW\4,4,2	1-8	601	454	1218	918	704	532
	9-10	1223	950	2455	1899	1428	1109

Appendix B

■ Configuration Information (2010,0150)

Specifies gradation tables in the FN-PS551. Eight types of gradation tables can be registered for each SCU AE, which will be specified by "1" to "8" or "CS000" to "CS999." For the latter, used LUTs are as follows.

Specified Value	Used LUT
CS000－CS199	1
CS200－CS299	2
CS300－CS399	3
CS400－CS499	4
CS500－CS599	5
CS600－CS699	6
CS700－CS799	7
CS800－CS999	8

Appendix C

■ 2100,0030/2110,0020 Values

Applicable to (2100,0030) and (2110,0020) when (2100,0020)=PENDING and (2110,0010)=WARNING.

CHECK CHEMISTRY	A problem with the processor chemicals has been detected, quality of processed films may not be optimal.
PRINTER DOWN	The printer is not operating for an unspecified reason.
PRINTER OFFLINE	The printer has been disabled by an operator or service person.
RECEIVER FULL	The Film receive magazine is full.
SUPPLY EMPTY	The printer is out of film.

Appendix D

■ Error Comment

Specify Error Comment (0000,0902) when returning the following Status. (Maximum 64 characters)

Code	Description	Error Comment (0000,0902)
0110H	An attempt was made to create 2nd Basic Film Session SOP instance.	Unable to handle multiple film session (BFS, N-CREATE)
0110H	The number of instances exceeded 32 in BFB N-CREATE.	Number of film boxes exceeds 32 (BFB, N-CREATE)
0110H	The instance created the last using BFB N-SET has not been specified.	Unable to handle a instance not created lastly (BFB, N-SET)
0110H	The instance created the last using BFB N-DELETE has not been specified.	Unable to handle a instance not created lastly (BFB, N-DELETE)
0110H	The instance not belonging to the BFB created the last using the BIB N-SET has been specified.	The instance doesn't belong to the last created FB (BIB, N-SET)
0110H	The instance that should be referred to by Presentation LUT N-DELETE has been specified.	Can't delete a instance which is referred to (LUT, N-DELETE)
0110H	BFBs of different film sizes were present in BFS N-ACTION.	Unable to print mixed film size Basic Film Boxes (BFS, N-ACTION)
0110H	A request for creation of BFB was received while the Laser Imager was in offline status.[2]	Printer off-line (BFB, N-CREATE)
0122H	A SOP class that is not supported has been specified.	SOP class not supported.
B602H	There were no Image Boxes while executing BFS N-ACTION.	No Image Box SOP instance (BFS, N-ACTION)
B603H	There were no Image Boxes while executing BFB N-ACTION.	No Image Box SOP instance (BFB, N-ACTION)
B604H	As the image is larger than the image size box, it should be reduced while executing BIB N-SET.	Image size is larger than image box demagnified (BIB, N-SET)
B605H	Maximum and minimum densities exceeded the specified ranges.	Requested Min Density or Max Density outside of printer's range.
C600H	There were no Film Boxes while executing BFS N-ACTION.	No Film Box SOP instance (BFS, N-ACTION)
C601H	Because the print queue was full, jobs could not be created while executing BFS N-ACTION.	Unable to create Print Job: Resource limitation (BFS, N-ACTION)
C602H	Because the print queue was full, jobs could not be created while executing BFB N-ACTION.	Unable to create Print Job: Resource limitation (BFB, N-ACTION)
C605H	No image storage areas were available while executing BIB N-SET.	Unable to store image data : Resource limitation (BIB, N-SET)

[2] When it is set not to receive data, a Failure is sent back if the Laser Imager connected to the print server is in offline status.